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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,140	12/26/2001	Stanley A. McClellan	1662-54000 JMH (P01-3766)	3918
22879	7590	09/23/2005	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			CHUNG, JI YONG DAVID	
			ART UNIT	PAPER NUMBER
			2143	

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/036,140

Applicant(s)

MCCLELLAN ET AL.

Examiner

Ji-Yong D. Chung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/23/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Remarks*

1. Applicant's arguments and amendments filed on June 23, 2005 have been carefully considered, and they are deemed at least partly persuasive.

The old rejections for all claims have been withdrawn.

New rejections of the claims follow, in the remainder of the instant, second non-final Office Action.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-13 and 15-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Baudot et al. (Pub. No. 2002/ 0107966, Baudot hereinafter) in view of Rajahalme. (Pub. No. US 2004/ 0107234).

With regard to **claim 1**, Baudot shows a system comprising:

*a primary instance of a transmission control protocol resident on the first computer* [See hardware device 100 in Fig. 1 for the "first computer." See TCP stack module 130, in Fig. 1 for "a primary instance of a transmission control protocol." See also paragraph 0045.];

*a primary data structure coupled to the primary instance describing the state of an association defining pathways between the cluster and the outside computer* [See paragraph 0033 for references to the connections, which are sockets (“primary data structure”). See paragraph 0045. The socket keeps the association between the endpoints. The first and second computers (See 200 in Fig. 1 for the second computer) form a cluster. “Remote end” in paragraph 0011 is the outside computer];

*a secondary instance of a transmission control protocol resident on the second computer* [See 210 in Fig. 1 for the second instance of transmission control protocol. See paragraph 0032];

*a secondary data structure coupled to the secondary instance replicated from the primary data structure* [See item 230 in Fig. 1. See paragraph 0045.];

*an intra-cluster network coupling the first computer and the second computer* [See line 400, in Fig. 1];

*a synchronization process coupled to the primary data structure and the secondary data structure replicating the primary data structure to the secondary data structure across the intra-cluster network to synchronize the structures* [See paragraph 0047];

*wherein the primary instance comprises a first node in the association between the outside computer and the cluster and wherein the outside computer comprises an opposite node* [The primary instance (the socket) comprises two nodes, one of which is the first computer. The remote end is the opposite end of the connection and “opposite node.”];

*wherein the secondary instance comprises a second node in the association between the outside computer and the cluster* [The secondary instance (socket which the second computer

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owns) comprises two nodes, one of which is the second computer. See Fig. 1 and paragraph 0047].

Baudot does not show, but Rajahalme shows

*wherein the association is configured such that the first node and the second node appear to the opposite node as different addresses for the same node* [See Fig. 1, 2 and 3 in Rajahalme. The client initially sends a request to the anycast agent (“the same node”). Upon routing the request to the specific server, the client can bind to a specific server (and its specific address). Thus, the servers appear to the client (“opposite node”) as different addresses for the same node].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use anycast of Rajahalme for failover servers in Baudot, because as indicated in paragraphs 0044, ‘anycast agent 6 can provide fault tolerance and fail-over support.’ Paragraphs 0045-0049 indicate how such system maybe implemented. Implementing Rajahalme’s system with Baudot’s system would necessitate corresponding modification and simplification of Baudot’s system.

With regard to **claim 2**, Baudot shows *the primary data structure is resident on the first computer and the secondary data structure is resident on the second computer*. See the discussion of above claim 1. See Fig. 1.

With regard to **claim 3**, Baudot does not specify that *the outside computer comprises a cluster of computers*. However, it is a remote endpoint (See paragraph 0011), and thus must have either a standalone computer or a network of computers resident in an intranet.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use HA network as revealed in Baudot for increased reliability of the remote endpoint. See paragraph 0010.

With regard to **claim 4**, Baudot does not show:

*the transmission control protocol comprises SCTP;*

*the primary instance is a primary instance of SCTP;*

*the secondary instance is a secondary instance of SCTP.*

However, see paragraph 0009, of which states that the technique described within Baudot's reference applies to SCTP. The communication stack would be based on SCTP and be the instances of SCTP on the first and the second computers.

In addition note that IP address associations of SCTP provides the same functionality as the anycast system of Rajahalme.

With regard to **claim 5**, Baudot shows *the synchronization process is triggered by detection of impending failure of the first instance*. See paragraphs 0055 and 0056.

With regard to **claim 6**, Baudot shows *the synchronization process occurs once after detection of impending failure of the first instance*. See paragraphs 0055 and 0056.

With respect to **claim 7**, its limitations have been discussed with respect to claim 1.

With respect to **claims 8 and 9**, their limitations have been discussed with respect to claims 3 and 4.

**Claims 10-11, 15-20, 22 and 23** substantively incorporate all the limitations of claims 1-2 and 5, but in method form rather than in apparatus form, except for one limitation, to be discussed below in reference to claim 10. The reasons for the rejections of claims 1-2 and 5 apply to claims 10-11, 15-20, 22 and 23. Therefore, claims 10-11, 15-20, 22 and 23 are rejected for substantially the same reasons.

**Claim 10's** limitation that has not been discussed with reference to earlier claims is *updating state information regarding the association in the primary data structure*. However, updating state information is inherent in sockets; as new data is exchanged in a network, socket data is updated.

With respect to **claim 12**, Baudot does not show *that the corresponding instance of the transmission control protocol on the outside computer does not recognize that the primary instance and the secondary instance are not the same instance, but does recognize that it is transmitting to an alternate address*. However, Baudot shows that the technique for HA can be used for the communication protocol SCTP as indicated in paragraph 0009.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a system that recognizes the difference between the IP address of the primary and the secondary server, because of the following reason.

In implementing HA system as Baudot disclosed, one must transfer the IP address of the primary server to the backup server upon the failure of the primary server. However, when one is using SCTP, the duplication of the IP address is not necessary, because SCTP provides for multi-homing (multiple IP addresses). The primary and the backup IP each would have an address of its own. Note that both IP's maybe controlled by the same instance. This applies equally well to Rajahlame's system, because anycast implements the association of SCTP.

Under SCTP, when the primary server fails, the remote system, in order to continuously communicate with the local system (despite the failure), *must* recognize, at some level in its communication protocol stack, the difference between the primary and the backup IP. Otherwise, it would not be able to properly switch over to the backup IP upon the failure.

From the standpoint of software implementation, the remote system would know whether the second IP address represents a second instance or the same instance, because the primary instance may use multiple network interface cards, each of which have different IP addresses. Failure of one card would cause the remote system to switch to another card, with a different IP address.

With respect to **claim 13**, Baudot meets the limitation, *the synchronization process occurs after every action of updating*, because the updating of the sockets after the failure of the primary server constitutes synchronization.



**Claim 21** incorporates all the limitations of claim 12, but in method form rather than in apparatus form. The reasons for the rejections of claim 12 apply to claim 21. Therefore, claim 21 is rejected for substantially the same reasons.

4. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Baudot and Rajahalme in view of Butler et al (Butler hereinafter).

With reference to **claim 14**, Baudot does not show that *synchronizing is triggered on a time schedule*.

Butler shows HA system in which servers transmit heartbeat signals periodically. See paragraph 0387, in which network information is updated. The servers synchronize their update information based on the heartbeat signals. See paragraphs 0390-0391.

It would have been obvious to one of ordinary skill in the art at the time of the invention to synchronize Baudot's communication network information based on periodic heartbeat, because as Butler shows in paragraph 0081, Butler's invention is directed to and therefore applicable to high availability servers. Baudot's servers are high availability servers and they need to be synchronized. See Fig. 1 of Baudot.

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***Conclusion***

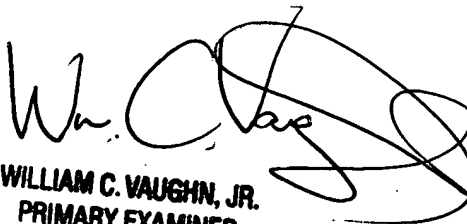
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ji-Yong D. Chung whose telephone number is (571) 272-7988.

The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ji-Yong D. Chung  
Patent Examiner  
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WILLIAM C. VAUGHN, JR.  
PRIMARY EXAMINER

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